

REMARKS

Claims 1-17 and 20-21 are currently pending in this application as amended. The Specification has been amended to correct several typographical errors, namely to correctly identify marker attachment points in Fig. 2 as 44a-44h. Support for the amendments to the Specification can be found, for example, in the original drawings and in the original Specification at page 10, line 4. Accordingly, no new matter has been added by the amendments to the Specification.

Claims 1-4, 6, 11, and 14 have been amended to clarify the subject matter that the Applicants regard as their invention. Support for the amendments can be found, for example, in the original drawings and in the original Specification at page 10, lines 1-21; at page 18, lines 8-14; and at page 19, lines 10-17. Accordingly, no new matter has been added by the amendments to the claims.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-13 and 20-21 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,096,048 (Howard). In view of the foregoing amendments, applicants respectfully traverse the rejection and request that the rejection of claims 1-13 and 20-21 be withdrawn for at least the following reasons.

Claim 1, as amended, is directed to a fiducial marker holder apparatus having first and second arms and recites, *inter alia*,

a second marker attachment device disposed at a distal end of the second arm of the open-ended frame, the second marker attachment device having a plurality of marker attachment points that receive fiducial markers, at least a portion of the second marker attachment device being disposed at an angle with respect to the second arm, at least two of the marker attachment points of the second marker attachment device being configured to receive fiducial markers in different orientations with respect to the second marker attachment device and each other.

[Emphasis added]

Similarly, claim 6, as amended, is directed to a fiducial marker holder apparatus having first and second arms and recites, *inter alia*,

an open-ended frame having first and second arms, the open-ended frame being configured to be removably attached to the maxillary holding device, the first arm having at least one marker attachment point that receives fiducial markers and the second arm having a plurality of marker attachment points that receive fiducial markers, at least two of the marker attachment points of the second arm being configured to receive fiducial markers in different orientations with respect to the open-ended frame and each other, at least one of the first arm and the second arm having a first portion and a second portion extending at an angle from the first portion.

[Emphasis added]

Howard fails to teach, suggest, or disclose having at least a portion of a marker attachment device disposed at an angle with respect to the arm, as recited in claim 1, or an arm having a first portion and a second portion extending at an angle from the first portion, as recited in claim 6.

Referring to Figs. 1-3, Howard discloses a skull fiducial marker system 1 having a U-shaped bar 3 tapering outwardly toward distal marker portions 9. Markers 11 are placed on the distal portions 9 through threaded openings 19. A number of holes 45 are formed in the distal portions 9 to reduce weight. A medial mounting portion 7 of the bar 3 receives mouthpiece 5 for fixing to the teeth of the patient. (col. 7, lines 22-55).

In contrast, claim 1 of the present application, as amended, includes a marker attachment device at a distal end of the second arm, at least a portion of which is disposed at an angle with respect to the second arm. For example, Fig. 1 shows a marker attachment device 40 having at least two portions disposed perpendicularly to the second arm 33, and also a portion disposed at an obtuse angle with respect to the second arm 33. Similarly, claim 6, as amended, requires that at least one of the arms have a first portion and a second portion, where the second portion is disposed at an angle with respect to the first portion. For example, Fig. 7 shows that arm 132 includes a first portion and a second portion disposed perpendicularly to the first portion.

The marker system 1 of Howard clearly does not include any portion or attachment device disposed at an angle with respect to the distal marker portions 9. As best shown in Fig. 2, the bar 3 is generally straight from the intermediary portion 7 to the distal marker portion 9. The

markers 11 all lie along the same axis defined by the distal portion 9. Conversely, the fiducial marker system of the present application allows a user to place markers at different angles and orientations to form more complex framing patterns, rather than just a simple straight line. Howard therefore does not teach, suggest, or disclose at least a portion of a marker attachment device being disposed at an angle with respect to the arm, or an arm having a first portion and a second portion disposed at angle with respect to the first portion.

Accordingly, Applicants respectfully request that the rejection of independent claims 1 and 6 under 35 U.S.C. § 102(b) be withdrawn.

Claims 2-5 and 20 are dependent upon claim 1. It is respectfully requested that the rejection of claims 2-5 and 20 based on Howard be withdrawn due at least to their dependence on claim 1.

Claims 7-13 and 21 are dependent upon claim 6. It is respectfully requested that the rejection of claims 7-13 and 21 based on Howard be withdrawn due at least to their dependence on claim 6.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 14-17 have been rejected under 35 U.S.C. § 103(a) as being obvious over Howard in view of U.S. Patent Application Publication No. 2003/0000535 (Galloway). In view of the foregoing amendments, applicants respectfully traverse the rejection and request that the rejection of claims 14-17 be withdrawn for at least the following reasons.

Claim 14, as amended, is directed to a fiducial marker holder system having first and second arms and recites, *inter alia*,

an open-ended frame having first and second arms, the open-ended frame being configured to be removably attached to the maxillary holding device, the first arm having at least one marker attachment point that receives fiducial markers and the second arm having a plurality of marker attachment points that receive fiducial markers, at least two of the marker attachment points of the second arm being configured to receive fiducial markers in different orientations with respect to the open-ended frame and each other, at least one of the first arm and the second arm having a first

portion and a second portion extending at an angle from the first portion.

[Emphasis added]

Both Howard and Galloway fail to teach, suggest, or disclose having an arm having a first portion and a second portion extending at an angle from the first portion.

When combining two or more references to establish a *prima facie* case of obviousness, the references together must teach or suggest all of the claim limitations. M.P.E.P. § 2143.

As described above with respect to claim 6, Howard discloses a distal portion 9 of a fiducial marker system 1 is straight, and therefore fails to disclose an arm having first and second portions being angled with respect to one another. (See, *e.g.*, Fig. 2). Galloway fails to compensate for the deficiency of Howard as a reference. Referring to Fig. 3, Galloway discloses a method and apparatus for performing image-guided surgery, including, for example, an ablative instrument 320, computer 305, reference emitter 330. (paragraph [0040]). However, Galloway only generally references fiducial markers and does not provide any detail regarding an apparatus for holding the fiducial markers. (See, *e.g.*, paragraph [0033]). Thus, Galloway does not teach an arm having first and second portions disposed at an angle with respect to each other because no structure of a fiducial marker system is described anywhere therein.

Claim 14 cannot be obvious under 35 U.S.C. § 103(a) in view of the combination of Howard and Galloway because the references together do not teach or suggest all of the claim limitations of claim 14. Therefore, it is respectfully requested that the rejection of claim 14 be withdrawn.

Claims 15-17 are dependent upon claim 14. It is respectfully requested that the rejection of claims 15-17 based upon obviousness over Howard in view of Galloway be withdrawn due at least to their dependence on claim 14.

CONCLUSION

In view of the foregoing Amendment and Remarks, it is respectfully submitted that the present application including claims 1-17 and 20-21, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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